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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/576,227

04/13/2006

Riki Okamoto

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EXAMINER

YANG, JIE

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/576,227	<b>Applicant(s)</b> OKAMOTO ET AL.	
	<b>Examiner</b> JIE YANG	<b>Art Unit</b> 1733	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 June 2011.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,9-11 and 19-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,9-11 and 19-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

Claims 2-8 and 12-18 have been cancelled; claims 1 and 9 have been amended; claims 21 and 22 are added as new claims; and claims 1, 9-11, and 19-22 remain for examination. Claims 1 and 9 are independent claims.

### ***Status of the Previous Rejection***

Previous rejection of claims 1, 9-11, 19, and 20 under 35 U.S.C. 103(a) as being unpatentable over Tsutomu (JP2001-342543 A, thereafter JP'543) evidenced by Yasuhara et al (US 6,364,968 B1, thereafter US'968) in view of Nomura et al (US 5,470,529 B1, thereafter US'529) is maintained.

### ***Claim Objections***

Claims 1 and 9 are objected to because of the following informalities: equation numbers "... (1)", "... (2)", "... (3).", "... (4).", "... (5)", "... (6)", "... (7)" in claim 1 and the equation numbers, "... (1)", "... (2)", "... (3)", "... (4)", "... (8)" in claim 9 should be correspondingly corrected as (1), (2), (3), (4), (5), (6), (7) in claim 1 and (1), (2), (3), (4), (8) in claim 9. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

Claims 1 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In the instant case, Claim 1 recites the limitation

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"...the structure primarily comprising bainite" in line 21 and claim 9 recites the limitation "...the structure primarily comprising ferrite and bainite" in line 21. There is insufficient antecedent basis for these limitations in the claims. The claims are suggested to be corrected as "...a structure primarily comprising bainite" in claim 1 and "...a structure primarily comprising ferrite and bainite" in claim 9.

### ***Claim Rejections - 35 USC § 103***

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 9-11, and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsutomu (JP2001-342543 A, thereafter JP'543) evidenced by Yasuhara et al (US 6,364,968 B1, thereafter US'968) in view of Nomura et al (US 5,470,529 B1, thereafter US'529).

JP'543 evidenced by US'968 and in view of US'529 is applied to the instant claims 1, 9-11, 19, and 20 for the same reason as stated in the previous office action marked 12/1/2010.

The amended features in the instant claims 1 and 9 do not change the scope of the instant claims.

Regarding the newly added claims 21 and 22, JP'543 teaches adding 0.003-0.25wt%Ti in the alloy (Abstract and claims 1-4 of JP'543), which overlapping the claimed Ti range of 0.13-0.20wt%

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(claim 21) and 0.120-0.20wt% (claim 22), which is a prima facie case of obviousness. SEE MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the claimed compositions of Ti from the composition disclosed by JP'543, because JP'543 discloses the same utility throughout the disclosed ranges.

### ***Response to Arguments***

Applicant's arguments filed 6/1/2011 have been fully considered but they are not persuasive. Regarding the arguments related to the amended features in the instant claims, the Examiner's position has been stated as above.

In the Applicant's arguments/remarks filed on 6/1/2011, the Applicant argues:

1) JP'543 does not teach or suggest the claimed composites of MgO, MgS, and (Nb,Ti)N. JP'543 teaches combined precipitates, which are quite different from those of the present invention. JP'543 does not teach or suggest controlling the oxygen level to not more than 0.005wt% and controlling Mg, O, S, and Mn in according to equations (1) to (3), or controlling the amounts of C, Mn Ti, and Nb in accordance with equations (5)-(7). In contrast, the instant invention has discovered that hole-expandability is remarkably improved by the formation of Mg-sulfides through controlling of the critical amounts of Mg, O, S (equations (1)-(3)).

2) JP'543 does not teach the bainite structure as required by claim 1. A person of ordinary skill in the art would not have expected that the microstructure of the JP' 543

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can be adjusted to bainite or ferrite+bainite according to the teaching of US'968 without at least altering its steel composition to exclude Mg, which is an element critical to the remarkably improved hole-expandability in the present invention.

3) Comparing to TS-hole expandability ratio among JP'543, US'968, and present invention (refer to Fig.2 of the instant remark), the present invention provides improved hole-expandability by means of precipitation of Mg-sulfides and the resultant steel sheet has superior hole-expandability.

4) JP'543 does not teach 0.08-1.5wt% Al. US'529 does not teach or suggest a steel composition having Mg; nor does US'529 recognize the effect of Al on a Mg containing steel, and the examples of US'529 does not exhibit improved hole-expandability. None of the cited references achieves the hole-expandability of the presently claimed steels.

5) None of the cited references recognize a correlation between the amounts of Mg and O, nor is there any constraint on their relative amount. None of the cited references teaches or suggests controlling the amount of O to be claimed threshold of equation (1).

In response,

Regarding the arguments 1) and 5), the Examiner disagrees with the Applicant's argument because JP'543 teaches not intentionally adding oxygen in the alloy and the oxygen is included in the level of unavoidable impurities (abstract and claims 1-4 of JP'543), which lower than the claimed upper limit of oxygen level 0.005wt% because a high oxygen content is not a normal condition for the high strength steel sheet, which is

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evidenced by the instant specification, for example the most comparison samples in the instant specification (table 1-16 of the instant specification) have the oxygen no more than 0.005wt%. Furthermore, as pointed out in the previous office action marked 12/1/2010, all of the major composition ranges disclosed by JP'543 (Abstract and claims 1-4 of JP'543) overlap the composition ranges of the instant invention, which is a prima facie case of obviousness. SEE MPEP 2144.05 I. JP'543 teaches adding 0.0005-0.01wt%Mg and not intentionally adding oxygen, which meets the equation (1) in the instant claims 1 and 9. Because the equations (1) to (7) in the instant claim 1 and the equations (1)-(4), and (8) in the instant claim 9 fully depend on the alloy compositions, it is the Examiner's position that the selection of the proportions of elements, Mg, O, S, Mn, Si, Al, C, Ti, and Nb from JP'543 evidenced by US'968 in view of US'529 in order to meet the equations (1) to (7) (claim 1) and/or to meet the equations (1)-(4), and (8) (claim 9) would appear to require no more than routine investigation by those ordinary skilled in the art. In re Austin, et al., 149 USPQ 685, 688. Still regarding the argument 1, JP'543 teaches that steel sheet is characterized by containing composite precipitates of MgO and (Nb,Ti)N (Claim 2 of JP'543), which reads on the composite precipitates of MgO, MgS and (Nb,Ti)N as recited in the instant claim because JP'543 teaches the similar S level as recited in the instant invention. Furthermore, the Examiner notes that there is no limitation in the instant claims to specify the MgS amount or distribution, and there is no limitation in the instant claims to indicate the combined precipitates as shown in Fig.1 of the instant remarks.

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Regarding the argument 2, as pointed out in the previous office action marked 12/1/2010, JP'543 teaches the steel having a structure of mainly a ferrite and the residue being a bainite (Abstract of JP'543), which reads on the structure of primarily comprising ferrite and bainite as recited in the independent claim 9. The secondary reference US'968 teaches a high-strength steel sheet having excellent stretch flangeability with a fine bainite structure and having a similar composition as disclosed in JP'543. It is the Examiner's position that it would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the microstructure as demonstrated by US'968 to the steel of JP'543 in order to obtain fine bainite structure (claim 1) because US'968 teaches the steel with a proper structure, for example the fine bainite structure having high tensile strength (990-1210MPa) and excellent in hole-expandability (Hole-expanding ratio: 155%-170%). The Applicant does not provide evidence to show that the Mg is a critical element for control the forming of bainite structure.

Regarding the argument 3, the Examiner notes that there is no limitation in the instant claims for the relationship between TS and hole-expandability and there is no limitation to show the criticality of MgS (or claimed S range) to the properties of the steel as argued.

Regarding the argument 4, the Applicant's argument is against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ



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375 (Fed. Cir. 1986). In the instant case, JP'543 evidenced by US'968 in view of US'529 teaches the limitations of instant claims 1, 9-11, and 19-22. The detail discussions and the motivation for combining JP'543, US'968 and US'529 can refer to the previous office action marked 12/1/2010.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-2701884. The examiner can normally be reached on IFP.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-2721244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jie Yang/  
Patent Examiner, Art Unit 1733